

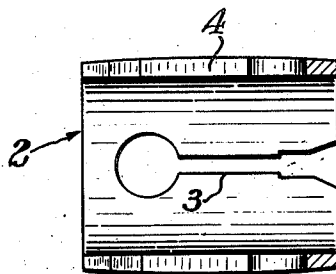
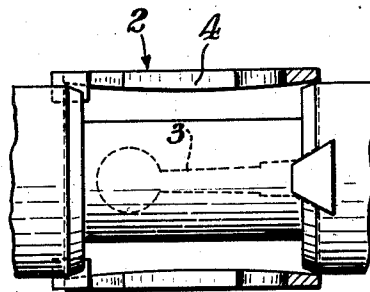
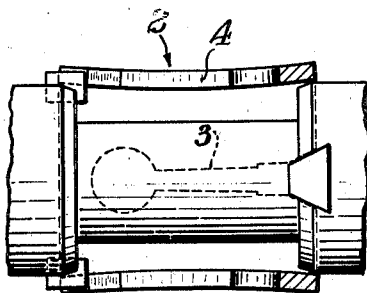
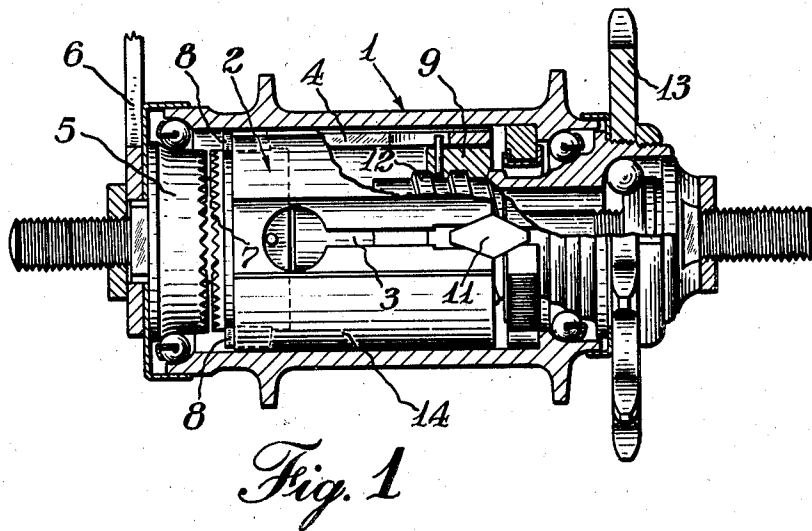
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S. B. KURZINA, JR

2,189,956

COASTER BRAKE AND METHOD OF MAKING SAME

Filed May 15, 1937



Witness:
Burr W. Jones

Fig. 4 BY *Stanley B. Kurzina Jr.*
Clinton A. Jones
ATTORNEY.

INVENTOR.

UNITED STATES PATENT OFFICE

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COASTER BRAKE AND METHOD OF MAKING
SAME

Stanley B. Kurzina, Jr., Elmira, N. Y., assignor, by
mesne assignments, to Bendix Aviation Corpo-
ration, South Bend, Ind., a corporation of Dela-
ware

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6 Claims. (Cl. 29—152.1)

The present invention relates to coaster
brakes for bicycles and the like and more par-
ticularly to the structure and method of man-
ufacture of the braking element thereof.

In that form of coaster brake known com-
mercially as the "Morrow" brake because the
device is constructed substantially in accord-
ance with the disclosure of the patent to Morrow
906,149, December 8, 1908, the braking element
consists of an elastic sleeve which is expanded
into engagement with the interior of the hub so
as to make frictional contact therewith. As
this sleeve has heretofore been constructed, the
expansion thereof distorted it out of true cylin-
drical shape, so that the frictional contact oc-
curred only at certain spots of comparatively
small area, thus causing localized and uneven
wear of the sleeve and hub. The contact sur-
faces were also apt to become glazed, thus con-
tributing to poor braking and accentuating the
failure to utilize the maximum effectiveness of
the brake.

It is an object of the present invention to
provide a novel braking device for a coaster
brake which is efficient and reliable in action
over long periods of use.

It is another object to provide such a device
incorporating an expansible brake sleeve which
is effective throughout substantially its entire
surface.

It is a further object to provide such a device
in which the brake sleeve is arranged to be
substantially truly cylindrical when it is ex-
panded into effective position.

It is another object to provide a novel method
of manufacturing brake sleeves of the type in-
dicated.

Further objects and advantages will be ap-
parent from the following description taken in
connection with the accompanying drawing in
which:

Fig. 1 is a side elevation partly in section and
partly broken away showing a preferred embod-
iment of the present invention;

Fig. 2 is a detail partly in section showing one
step in the preferred method of manufacture
of the device;

Fig. 3 is a similar view showing a further step
in such method of manufacture; and

Fig. 4 is a detail in longitudinal section of a
completed brake sleeve constructed in accord-
ance with the present invention.

Referring first to Fig. 1 of the drawing, there
is illustrated a coaster brake of the "Morrow"
type comprising a hub 1 interiorly cylindrical,

and a brake sleeve 2 mounted therein. The
brake sleeve is provided with longitudinal slots
3 and 4 entering the sleeve from the opposite
ends alternately and traversing the major por-
tion of the sleeve in order to render the same
elastically expansible.

Means for anchoring the sleeve against rota-
tion are provided in the form of a toothed
anchor member 5 which is prevented from rota-
tion by a torque arm 6, and a toothed clutch
member 7 adapted to engage therewith and non-
rotatably connected to the sleeve 2 by means of
wedge lugs 8 which engage in the flared ends of
slots 4.

Means for expanding the sleeve 2 into en-
gagement with the hub is provided including a
nut 9 carrying wedge lugs 11 which are forced
into the flared ends of the slots 3 by the action
of screw threads 12 on the hub of the sprocket
13 and cooperate with the lugs 8 to expand the
sleeve.

The outer surface of the sleeve 2 may be pro-
vided with brake shoes 14 of brass or other suit-
able material of cylindrical conformation suit-
ably attached to the sleeve as by means of rivets.

According to the present invention, the sleeve
2 when relaxed is slightly convex longitudinally
as illustrated in Fig. 4, while the segmental por-
tions thereof between the slots 3 and 4 are
formed with a radius substantially the same as
the interior of the hub 1. The brake sleeves are
so formed by taking a suitable cylindrical tube
of slightly less diameter than the interior of the
hub, forming longitudinal slots therein by
punching or milling operations or a combina-
tion thereof, mounting the elastic sleeve so
formed on an expanding arbor as shown in Fig.
2, and operating the arbor to expand the sleeve
until its minimum diameter is substantially the
same as the interior of the hub so that the sleeve
assumes an hour glass shape as there illus-
trated. The sleeve is then milled off to a true
cylindrical conformation of substantially the
same diameter as the interior of the hub 1, as
illustrated in Fig. 3. When the sleeve is re-
moved from the arbor, it then springs back to
its original internal diameter and assumes the
somewhat barrel shape illustrated in Fig. 4. It
will be understood that in Figs. 2, 3 and 4 the
curvatures are considerably exaggerated for the
sake of clarity.

The sleeve 2 may, of course, be hardened in
the usual manner in order to increase its elastic-
ity, and when brake shoes 14 are employed, they
will be applied before the sleeve is placed on the

expanding mandrel. The surfaces of the brake shoes are then distorted by the expansion of the mandrel and are then milled to cylindrical conformation as above described.

- 5 In the operation of the device herein disclosed, expansion of the sleeve 2 by the wedges 8 and 11 by backward rotation of sprocket 13 causes the sleeve, or the brake shoes 14 thereon when such are employed, to assume a substantially full surface contact with the interior of the hub 1 whereby localized pressures and overheating are avoided and the brake sleeve is utilized to its fullest effectiveness.

What is claimed is:

- 15 1. In a coaster brake, a cylindrical hub, a substantially cylindrical expansible brake sleeve therein, and means for anchoring said sleeve against rotation and for expanding the same into frictional contact with the interior of the hub, said sleeve being slightly convex longitudinally when relaxed, said expanding means being operative to true up the cylinder when it is expanded into engagement with the hub.
- 20 2. In a coaster brake, a cylindrical hub, a substantially cylindrical brake sleeve therein having staggered longitudinal slots extending alternately from opposite ends to render the sleeve radially expansible, means for preventing rotation of the sleeve, and means for wedging open the ends of the slots, the exterior of said sleeve being normally slightly barrel-shaped and being sprung into a true cylinder by the operation of the wedging means.

3. In a coaster brake, a cylindrical hub, a cy-

lindrical brake sleeve in the hub having longitudinal slots extending inward from each end alternately, the periphery of the sleeve having friction surfaces of substantially the same radius as the interior of the hub, said surfaces being slightly convex longitudinally, and means for wedging open the ends of the slots to expand the sleeve into engagement with the hub.

4. A method of manufacture of expansible cylindrical brake sleeves for coaster brakes or the like including the steps of forming longitudinal slots in a sleeve extending inwardly from each end thereof, wedging the ends of the slots open to expand the sleeve, and then machining the exterior of the sleeve to a true cylinder.

5. A method of manufacture of expansible cylindrical brake sleeves for bicycle hub brakes or the like including the steps of forming staggered longitudinal slots in a sleeve extending inwardly from each end thereof, wedging the ends of the slots open to expand the sleeve, and then machining the exterior of the sleeve to a true cylinder of substantially the same diameter as the interior of the brake hub.

6. A method of manufacture of expansible cylindrical brake sleeves for coaster brakes or the like including the steps of forming staggered longitudinal slots in a sleeve extending inwardly from each end thereof, affixing friction members to the exterior of the sleeve between the slots, wedging the ends of the slots open to expand the sleeve, and then machining the exterior of the friction members to a true cylinder.

STANLEY B. KURZINA, Jr.